

Please amend the claims as set forth below.

1-9 (Cancelled)

10.(Previously presented) A vacuum heat treating furnace comprising:

- A. a vacuum vessel having a vessel wall;
- B. a hot zone disposed in said vacuum vessel, said hot zone having a hot zone wall;
- C. a plenum formed between the vessel wall and the hot zone wall;
- D. a plurality of gas injection nozzles extending through the hot zone wall to interconnect the plenum and the hot zone;
- D. a cooling gas system for providing a forced cooling gas into the plenum; and
- E. a plurality of check valves connected to the gas injection nozzles externally of the hot zone wall, each of said plurality of check valves comprising:
 - I. a valve body having an inlet portion, an outlet portion, and a channel that extends through the valve body between the inlet portion and the outlet portion;
 - ii. a chamber formed in the inlet portion of said valve body, said chamber encompassing the channel and having a recess formed therein adjacent to said channel; and
 - iii. a flap that is pivotally supported in said chamber such that said flap is adapted to swing toward the outlet portion of said valve body, said flap having a closed position whereby the channel is closed to the

flow of cooling gas and an open position whereby the channel is open to the flow of cooling gas and said flap is located substantially within the recess in said chamber.

11.(Cancelled)

12.(Previously presented) The vacuum heat treating furnace of claim 10, wherein the valve body and the flap are formed of graphite or a ceramic material.

13.(Original) The vacuum heat treating furnace of claim 12, wherein the shaft is formed of molybdenum.

14.(Previously presented) The vacuum heat treating furnace of claim 10, wherein the flap has a shape that substantially conforms with the shape of the recess, said flap being configured to rest in the recess flush with a wall of the channel when the flap is in the open position.

15.(Cancelled)

16.(Previously presented) A hot zone for use in a vacuum heat treating furnace comprising:

- A. a closed wall defining an internal volume;
- B. insulation means disposed over an interior surface of said closed wall;
- C. a plurality of gas injection nozzles disposed in said closed wall for injecting a cooling gas into the hot zone; and

- D. a plurality of check valves each being connected to one of the gas injection nozzles externally of the closed wall, each of said check valves comprising:
- I. a valve body having an inlet portion, an outlet portion, and a channel that extends through the valve body between the inlet portion and the outlet portion;
 - ii. a chamber formed in the inlet portion of said valve body, said chamber encompassing the channel and having a recess formed therein adjacent to said channel; and
 - iii. a flap that is pivotally supported in said chamber such that said flap is adapted to swing toward the outlet portion of said valve body, said flap having a closed position whereby the channel is closed to the flow of cooling gas and an open position whereby the channel is open to the flow of cooling gas and said flap is located substantially within the recess in said chamber.

17.(Cancelled)

18.(Original) The hot zone set forth in claim 16, wherein each of the check valves comprises a shaft for supporting said flap, said shaft extending through an edge of said flap and having end portions supported by the valve body in said chamber.

19.(Original) The hot zone set forth in claim 16, wherein the valve body and

the flap are formed of a refractory material.

20.(Previously presented) The hot zone set forth in claim 16, wherein the valve body and the flap are formed of graphite or a ceramic material.

21.(Previously presented) The hot zone set forth in claim 18, wherein the shaft is formed of molybdenum.

22.(Previously presented) The hot zone set forth in claim 16, wherein the flap is dimensioned to fit entirely within the recess.

23.(Canceled)

24.(Previously presented) The vacuum heat treating furnace of Claim 10 further comprising a coupling connected between the outlet portion of each of said plurality of check valves and to each of the plurality of gas injection nozzles.

25.(Previously presented) The vacuum heat treating furnace of Claim 24 wherein said coupling is an elbow coupling.

26.(Canceled)

27.(Previously presented) The vacuum heat treating furnace of Claim 16 further comprising a coupling connected between the outlet portion of each of said plurality of check valves and to each of the plurality of gas injection nozzles.

**Application No. 10/651,130
Docket No. 4088-P03270US**

**Group Art Unit 1742
Confirmation No. 8187**

28.(Previously presented) The vacuum heat treating furnace of Claim 27
wherein said coupling is an elbow coupling.